

17/05/19

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B.E / B.Tech (FT) END SEMESTER EXAMINATIONS – APRIL / MAY 2019

INFORMATION TECHNOLOGY  
Fifth Semester  
IT8501 COMPUTER NETWORKS  
(Regulation 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

Part - A (10 x 2 = 20 Marks)

- Which of the OSI layers handle each of the following?
  - Dividing the transmitted bit stream into frames.
  - Determining which route through the subnet to use.
- What is the application layer protocol of WWW? What is its port number?
- What is the need for two protocols in the transport layer of TCP/IP reference model?
- Write short notes about the multiplexing and demultiplexing operations of the transport layer.
- Network layer and transport layer should coordinate with each other in congestion control. Justify this statement.
- What is meant by loopback address in IPv4?
- Ethernet frames must be at least 64 bytes long. Why?
- Whether collisions occur in IEEE 802.5 Token Ring LAN? Justify your answer.
- Why is differential Manchester encoding is preferred over Manchester encoding?
- What are the advantages and disadvantages of wireless media over wired media?

Part - B ( 5 x 16 = 80 Marks)

- Explain the various types of devices used to create a WAN as an interconnection of multiple WANs (8)
      - Explain the purpose, topology and technologies involved in core networks and edge networks in enterprise networks. (8)
  - Discuss two army problem that has an impact in designing the three way handshake protocol followed in transport layer. (5)
      - Explain Tom Linson's three way handshake protocol followed to establish connections in transport layer level and how an established transport layer connection is released. (5+6)
- (OR)
- Draw the UDP header and explain its fields. Explain the significance of UDP in recent data communication. (6)



- ii. Explain the TCP header by explaining various fields present in the header. (10)
13. a) i. Describe the classful addressing scheme followed in IPv4. (5)  
 ii. Discuss the temporary solutions that have been provided by IPv4 to solve the problem of address space exhaustion and explain the packet forwarding algorithm that supports subnetting followed in IP. (6+5)  
 (OR)
- b) i. Explain the link state routing algorithm with a sample network topology. (10)  
 ii. Discuss the advantages and disadvantages of link state routing over distance vector routing. (6)
14. a) i. A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is  $x^3+1$ . Assume that the third bit from the left is inverted during transmission and show how this error is detected at receiver's end. (10)  
 ii. Describe flag byte with byte stuffing and starting and ending flags with bit stuffing framing techniques with examples. (3+3)  
 (OR)
- b) i. Explain the CSMA/CD protocol followed by Ethernet to detect and resolve collisions. (8)  
 ii. Describe how the operation of CSMA/CD is enhanced by Binary Exponential Backoff algorithm. (8)
15. a) i. Illustrate the functioning of an optical fiber transmission system in terms of emitter, fiber and detector. (8)  
 ii. Describe the functioning of a microwave based communication system and discuss the advantages of microwaves over radio waves. (8)  
 (OR)
- b) i. Explain how the channels are multiplexed on the sender side and demultiplexed on the receiver side using time division multiplexing. (8)  
 ii. Discuss the advantages and disadvantages of TDM over FDM. (8)

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